

P. rickardi Costa Lima, 1936, differs in the shape and length of the median clasper, in the position of the basal tuft, and in the palpal formula of 1, 2, 4, 3, 5.

P. rorotoensis Floch and Abonnenc, 1944, differs in the shape of the median clasper, the position of the basal tuft, in the palpal formula of 1, 2, 4, 3, 5, and in the wing vein ratios.

P. stewarti Mangabeira and Galindo, 1944, and *P. vexator* Coquillett, 1907, differ especially in the small basal tuft consisting of only a few hairs.

REFERENCES

- Floch, H., and Abonnenc, E., 1944. Phlebotomes de la Guyane Francaise (IX). Description de la femelle de *P. fluviatilis* et de trois especes nouvelles. Inst. Past. Guy. Terr. L'Inini, Publ. No. 83: 1.
- Hertig, M., 1938. Notes on Peruvian sandflies. Identification of females of *Phlebotomus verrucarum* and *P. noguchii*.
- Hertig, M., 1943. Notes on Peruvian sandflies with descriptions of *Phlebotomus battistinii*, n. sp. and *P. pescei*, n. sp. Amer. Jour. Hyg. 37: 246.
- Ristorcelli, A., and Dao Van Ty, 1941. Mission E. Brumpt et L. Ch. Brumpt en Colombie. III. Phlebotomes d'une region de Colombie ou la verruga du Perou est devenue endemique depuis deux ou trois ans (seconde note). Ann. Parasit. Hum. Comp. 18: 251.

ON THAUMAPSYLLINAE, A NEW SUBFAMILY OF BAT FLEAS (SUCTORIA, ISCHNOPSYLLIDAE)

BY H. E. KARL JORDAN, *Tring, Herts*

The two known species of the Old World genus *Thaumapsylla* Rothschild, 1907, are in their build so exceptional among the bat fleas of the world (some 70 species), and the comparison of one with the other is so instructive, that these remarkable insects appear to me to be a very suitable subject for a short note written as an expression of my esteem and affection for the great entomologist to whom the June number of the Proceedings is dedicated.¹

Until the discovery of *Thaumapsylla* the bat fleas were generally considered to be slender insects with a long head and a long thorax. As *Thaumapsylla breviceps* Rothschild, 1907 (on fruit-eating bats in Africa and the Oriental Region), has the proportionally shortest head of all known fleas and a very short pronotum (apart from the comb), our concept of a bat flea had to be changed, and a further change in the diagnosis

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of the family was caused by the second species, *Th. dina* Jordan, 1937 (tropical Africa), which has a cephalic comb consisting of three spines, instead of two as in all other bat fleas.

The chief distinctions of *Thaumapsylla* are found on the head and thorax; though the abdomen is broader than is usual in bat fleas, the terminal segments rather closely resemble those of the slender species of *Lagaropsylla* Jord. & Roths., 1921 (Africa and Oriental Region). The bearing of these distinctions of *Thaumapsylla* on the evolution of bat fleas becomes evident when the two species are compared with each other. The head is shorter in *Th. breviceps* (fig. 2) than in *Th. dina* (fig. 1); the minute hairs on the frontal area are more numerous; in between the large bristles of the median row of the posterior external area there are many small ones, which is quite unusual; and the lower bristles of the posterior row are rather close together and without the alternate small bristles characteristic of the posterior row on the head, thorax and abdominal terga I to VII (sometimes also on metepimerum) of fleas, these alternates having attained the size of the long ones on the head of *Th. breviceps*, but being normal in *Th. dina*. The pronotal comb extends much further down in *Th. breviceps* than in any other known flea. The pronotum is divided in both species by a vertical non-sclerotized line, which separates an anterior area bearing the row of long bristles from the posterior area bearing the marginal comb (such a line is indicated in some other fleas). This division is ventrally less definite in *Th. dina* than in *Th. breviceps*. The bristles of the posterior row on the meso- and metanotum are somewhat prolonged in *Th. breviceps* (as they are in several bat fleas, a secondary development), but not in *Th. dina*; in *Th. dina* the alternates in these rows are normal, whereas in *Th. breviceps* they are more numerous than usual. The internal band-like sclerotization extending forward and upward from near the lower end of the sterno-meral rod of the mesothorax (the sclerotized stripe is often defined in some other bat fleas) is more reduced in *Th. breviceps* than in *Th. dina*, as is also the episternum of the metathorax, the pale central area of the sclerite being absent in *Th. breviceps* and present though small in our series of five *Th. dina*. The bristles on the sternum and epimerum of the metathorax are more numerous in *Th. breviceps* than in *Th. dina*.

It is evident from these differences that the two species represent two well-defined stages in the evolution of this branch of bat fleas and that *Th. breviceps* is the more specialized one of the two. It seems reasonable, therefore, further to conclude that the longer head of *Th. dina* with its three

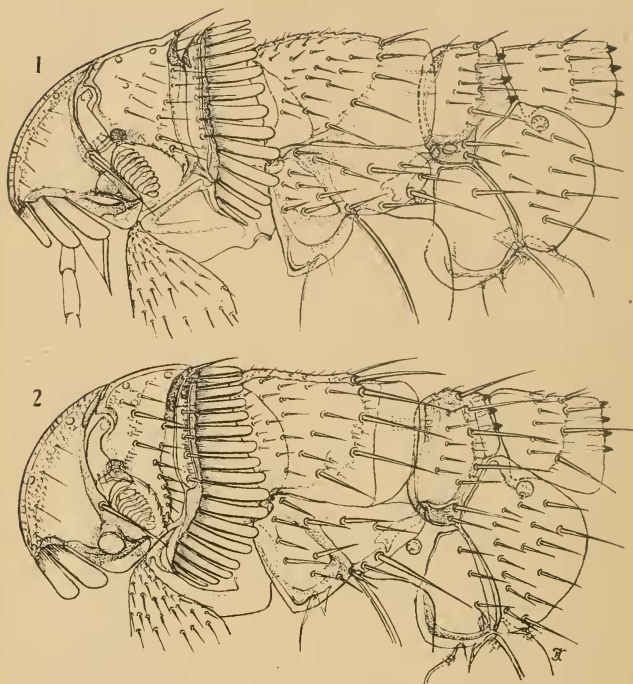


Fig. 1.—*Thaumapsylla dina*, male. Fig 2.—*Th. breviceps*, male.

ventral spines instead of two is more primitive than the head of *Th. breviceps*. This conclusion justifies the suggestion that the small number of genal spines in bat fleas is due to the reduction of an ancestral comb that consisted of a greater number of spines. Such a species may still be discovered on one of the very numerous bats from which no fleas have as yet been obtained. It would link the bat fleas with some genera of Australian *Macropsyllidae* (on native rodents), from a cousin of which that had eight major combs on the thorax and a multidentate cephalic comb the bat fleas have probably descended.